What is Claimed

1. A zeolite adsorbent comprising a molecular composition and structure containing at least one monovalent or divalent atom substituted for at least one trivalent or higher valent atom so that at least one exposed non-framework charge balancing cation is increased in the structure to effect higher selective gas selectivity over that of a similar molecular structure having only trivalent or higher valent atoms.

2. The zeolite adsorbent of claim 1 wherein the divalent atom is selected from the group comprising zinc, cobalt, iron, magnesium, manganese and beryllium.

3. The zeolite adsorbent of claim 2 wherein the divalent atom is zinc.

4. The zeolite adsorbent of claim 2 wherein the divalent atom is cobalt.

5. The zeolite adsorbent of claim 1 wherein said structure is selected from the group comprising EMT, EMT/FAU, BEA, CAN, GME, LTL, MAZ, MOR, MTW, and OFF.

6. The zeolite adsorbent of claim 5 wherein said structure is a EMT structure.

7. The zeolite adsorbent of claim 5 wherein said structure is a EMT/FAU structure.

8. The zeolite adsorbent of claim 5 wherein said structure is a BEA structure.

9. The zeolite adsorbent of claim 1 wherein said structure is selected from the group comprising Li-ZnEMT, Li-ZnEMT/FAU, Li-ZnBEA, Li-ZnCAN, Li-ZnGME, Li-ZnLTL, Li-ZnMAZ, Li-ZnMOR, Li-ZnMTW and Li-ZnOFF.

10. The zeolite adsorbent of claim 9 wherein said structure is Li-ZnEMT.

11. The zeolite adsorbent of claim 9 wherein said structure is Li-ZnEMT/FAU.

12. The zeolite adsorbent of claim 9 wherein said structure is Li-ZnBEA.

13. A process for selectively adsorbing nitrogen from a gas mixture containing nitrogen and at least one less strongly adsorbed component which comprises contacting the gas mixture with a zone of an adsorbent which is selective for adsorption of nitrogen, selectively adsorbing nitrogen on the adsorbent and discharging the gas mixture minus the adsorbed nitrogen out of the zone wherein the adsorbent comprises a zeolite material containing a molecular structure containing at least one monovalent or divalent atom substituted for at least one trivalent or higher valent atom so that at least one exposed non-framework charge balancing cation is increased in the structure to effect higher nitrogen selectivity over that of a

molecular structure having only trivalent or higher valent atoms.

14. The process of claim 13 wherein the gas is air.

15. The process of claim 13 wherein the divalent atom is selected from the group comprising zinc, cobalt, iron, magnesium, manganese and beryllium.

16. The process of claim 13 wherein the divalent atom is zinc.

17. The process of claim 16 wherein the divalent atom is cobalt.

18 The process of claim 13 wherein said structure is selected from the group comprising EMT, EMT/FAU, BEA, CAN, GME, LTL, MAZ, MOR, MTW, and OFF.

19. The process of claim 18 wherein said structure is an EMT structure.

20. The process of claim 19 wherein said EMT structure has 3 general cation sites I', II and III/III' and said III/III' sites are accessible to gas molecules because of the increase of exposed non-framework charge balancing cations due to the divalent atom substitution for the trivalent atom.

21. The process of claim 13 wherein said structure is selected from the group comprising Li-

ZnEMT, Li-ZnEMT/FAU, Li-ZnBEA, Li-ZnCAN, Li-ZnGME, Li-ZnLTL, Li-ZnMAZ, Li-ZnMOR, Li-ZnMTW and Li-ZnOFF.